PANJAB UNIVERSITY, CHANDIGARH-160014 (INDIA)

OUTLINES OF TESTS SYLLABI AND COURSES OF READING

FOR

Bachelor of Vocation (Hardware and Networking)

Session 2018-19

(1st to 6th Semester)
# SCHEME OF B.Voc.(HARDWARE AND NETWORKING)

(SEMESTER SYSTEM)

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Generic/ Skill Component</th>
<th>Theory/ Practical</th>
<th>Internal (Theory)</th>
<th>External (Theory)</th>
<th>Internal (Practical)</th>
<th>External (Practical)</th>
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<tbody>
<tr>
<td>*GEN-101</td>
<td>Communication Skills</td>
<td>Generic</td>
<td>Theory</td>
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<tr>
<td>*GEN-102</td>
<td>Fundamentals of Information Technology</td>
<td>Generic</td>
<td>Theory</td>
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<tr>
<td>HWN-103</td>
<td>Computer Hardware</td>
<td>Skill</td>
<td>Theory &amp; Practical</td>
<td>10</td>
<td>40</td>
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<tr>
<td>HWN-104</td>
<td>Network Fundamentals</td>
<td>Skill</td>
<td>Theory &amp; Practical</td>
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<td>HWN-105</td>
<td>Practical on Networking-I</td>
<td>Skill</td>
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## SEMESTER II

<table>
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<tr>
<td>*GEN-201</td>
<td>Soft Skills and Personality Development</td>
<td>Generic</td>
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<tr>
<td>GC-202</td>
<td>Business Ethics</td>
<td>Generic</td>
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<td>HWN-203</td>
<td>Personal Computing Software</td>
<td>Skill</td>
<td>Theory &amp; Practical</td>
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<td>HWN-204</td>
<td>Computer Hardware and Trouble Shooting</td>
<td>Skill</td>
<td>Theory &amp; Practical</td>
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<td>HWN-205</td>
<td>Practical on Networking-II</td>
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<td>**SIT-201</td>
<td>Summer Industrial Training</td>
<td>Skill</td>
<td>Practical</td>
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*Refer to Generic Components Common to all B.Voc. Courses

**Job Role:** Field Technician-Computing and Peripherals

** Summer Industrial Training of 4-6 weeks in a relevant Industry after 2nd Semester Examinations during summer break. Training report by the student to be submitted within in one week of start of 3rd Semester. Viva-Voce examination to be held within 3-weeks of the start of 3rd semester
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<td>Value Education And Human Rights</td>
<td>Generic</td>
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<td>E-Commerce</td>
<td>Generic</td>
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<td>HWN-303</td>
<td>Windows Operating System</td>
<td>Skill</td>
<td>Theory &amp; Practical</td>
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<tr>
<td>HWN-304</td>
<td>Routing and Switching</td>
<td>Skill</td>
<td>Theory &amp; Practical</td>
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<td>HWN-305</td>
<td>Routing Configuration &amp; Network Connectivity</td>
<td>Skill</td>
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</table>

**SEMESTER IV**

| *GEN 401  | Environmental Studies                          | Generic                  | Theory            | 20               | 80               | --                  | --                  | 6      |
| GC-402     | Project Management                             | Generic                  | Theory            | 20               | 80               | -                   | -                   | 6      |
| HWN-403    | Windows Server Administration                   | Skill                    | Theory & Practical| 10               | 40               | 10                  | 40                  | 6      |
| HWN-404    | Network Administration & Trouble Shooting      | Skill                    | Theory & Practical| 10               | 40               | 10                  | 40                  | 6      |
| HWN-405    | Switching Configuration & Network Connectivity | Skill                    | Practical         | -                | -                | 20                  | 80                  | 6      |
| **SIT-401**| Summer Industrial Training                     | Skill                    | Practical         | --               | --               | 20                  | 80                  | 6      |

*Refer to Generic Components Common to all B.Voc. Courses*

** Summer Industrial Training of 4-6 weeks in a relevant Industry after 4th Semester Examinations during summer break. Training report by the student to be submitted within one week of start of 5th Semester. Viva-Voce examination to be held within 3-weeks of the start of 5th semester.

Job Role: Network Support Engineer
<table>
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<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Generic / Skill Component</th>
<th>Theory / Practical</th>
<th>Internal (Theoretical)</th>
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<td>*GE N 501</td>
<td>Critical Thinking and Elementary Statistics</td>
<td>Generic</td>
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<tr>
<td>GC-502</td>
<td>Introduction To Research Methodology And Report Writing</td>
<td>Generic</td>
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<tr>
<td>HW N-503</td>
<td>Linux Operating System</td>
<td>Skill</td>
<td>Theory &amp; Practical</td>
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<tr>
<td>HW N-504</td>
<td>VMware Workstation</td>
<td>Skill</td>
<td>Theory &amp; Practical</td>
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<tr>
<td>HW N-505</td>
<td>Advanced Routing and Switching</td>
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<td>Practical</td>
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</table>

Note: Winter Industrial/ In-house Training of 2-3 weeks in a relevant area after 5th Semester Examinations in winter break.

**SEMESTER VI**

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title</th>
<th>Generic / Skill Component</th>
<th>Theory / Practical</th>
<th>Internal (Theoretical)</th>
<th>Extern al (Theoretical)</th>
<th>Internal (Practical)</th>
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<tr>
<td>*GE N 601</td>
<td>Entrepreneurship Development Programme</td>
<td>Generic</td>
<td>Theory</td>
<td>20</td>
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<tr>
<td>GC 502</td>
<td>Total Quality Management</td>
<td>Generic</td>
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<td>HWN-603</td>
<td>Wireless Communication And Networking</td>
<td>Skill</td>
<td>Theory &amp; Practical</td>
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<td>HWN-604</td>
<td>Firewall Technology</td>
<td>Skill</td>
<td>Theory &amp; Practical</td>
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<td>HWN-605</td>
<td>Implementation Of Advanced IP Routing</td>
<td>Skill</td>
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<tr>
<td>**SIT-601</td>
<td>Summer Industrial/ In-house Training and Comprehensive Viva</td>
<td>Skill</td>
<td>Practical</td>
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<td>80</td>
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</table>

*Refer to Generic Components Common to all B.Voc. Courses

**Winter Industrial/ In-house Training of 2-3 weeks done after 5th Semester Examinations and before start of 6th semester. Training report by the student to be submitted within in one week of start of 6th Semester. Viva-Voce examination to be held within 3-weeks of the start of 6th semester. Job Role: Network Administrator
Objective: The objective of this paper is to develop communication skills, discover what business communication is all about and learn how to adapt the communication experiences in life and to the business world.

Instructions for Examiner:
1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising two questions from each unit, including Question No.1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I

Introduction to Communication: Need for Effective Communication, The Process of Communication, Levels of communication, Flow of communication, Use of language in communication, Communication networks, Significance of technical communication, Barriers to Communication, Types of barriers, Miscommunication, Noise, overcoming measures.

UNIT-II

Verbal Communication: Planning, Preparation, Delivery, Feedback and Assessment of Activities like –Public Speaking, Group discussion, Presentation Skill, Audio-Visual Aids,

UNIT-III

SWOT analysis: Self-management techniques, Self-image and Self-esteem, Building self-confidence, Power of irresistible enthusiasm, Etiquettes, Etiquettes in Social as well as Office Atmosphere, Telephone Etiquettes, E-mail Etiquettes, etiquettes and manners. Importance of listening and responding.

UNIT-IV

Report Writing: Business reports: Types, Characteristics, Importance, Elements of structure, Process of writing, Order of writing, the final draft, check lists for reports. Business Correspondence: Inviting quotations, Sending quotations, placing orders, Inviting tenders, Sales letters, claim & adjustment letters and social correspondence.

Suggested Resources for Reading:

2. ‘Developing Communication Skills’ by Krishmohan and Meera Banerjee, Macmilan India Ltd.
   ‘Communication Skills’ by Sanjay Kumar &PushpLata, Oxford University Press

References Resources:

1. ‘An Approach to Communication Skills’ by Indrajit Bhattacharya, Delhi : DhanpatRai
2. ‘Introduction to Psychology’ by Atkinson and Hilgard’s, Edward E. Smith, Susan Nolen-Hoeksema, Barbara Fredrickson, Geoffrey Loftus

**********
Objective: The objective of the paper is to familiarize the students with developments in Information Technology, Internet and use of computer systems at operating system level and application level.

Instructions for Examiner:
1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising two questions from each unit, including Question No.1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I

Computers: Introduction to computers, characteristics of computer, organization of computers, hardware, software, data, information, Types of computer: Classification on the basis of purpose: digital computers, analog computers, hybrid computers; Classification on the basis of size: microcomputers, mini computers, mainframe computers and supercomputers, desktop computers, laptops, workstations, PDA. Generations of computer, Uses and Application of computers.

UNIT-II


UNIT-III

Software: Introduction, Types of Software: Application software, System software. Operating system, functions of operating system, types of operating system. Data processing, Data processing systems:
batch processing, online processing, time sharing, real-time applications, Single-user, multi-user, and client-server systems; distributed and parallel processing systems; Translators: compilers, interpreters and assemblers.

UNIT-IV

**Computer Networks:** Introduction, types of networks on the basis of area coverage: LAN, WAN, MAN. **Internet and WWW:** Evolution of Internet, Various Internet services (WWW, e-mail, telnet, ftp, IRC, news) and their uses, Access Methods, Browsers, Future of Internet, Applications of Internet, Evolution of www.

**Suggested Resources for Reading:**


**References Resources:**


**********
Job Role: Field Technician-Computing and Peripherals

Objectives: Hardware Fundamentals enable the students to learn about hardware technologies, their implementation/installation, uses, troubleshooting and maintenance.

Instructions for Examiner:
1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising two questions from each unit, including Question No.1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I
Introduction to computer hardware: Peripheral devices of a Computer system, Add On cards: network interface card, sound card and graphics card, functional description of various parts of a PC, UPS, Types of UPS: offline, online and line interactive UPS

UNIT-II

UNIT-III
Cables: Types of Cables: USB, VGA, DVI, RJ11, RJ45, HDMI, SERIAL, and PARALLEL. Connecting Cables from SMPS to motherboard, hard disk etc. Establishing data connection for mother board, hard disk, and drivers. Fixing wires for power restart switches, fixing wires for power & HDD LED, External USB and Audio Connections. Drivers: Types of drivers: Device drivers, LAN drivers, sound drivers, graphics drivers.

UNIT-IV
BIOS: Introduction, Connecting & disconnecting computer peripherals and components Mouse, Keyboard, Monitor, Hard Disk. Window installation, Hard disk: partitioning and formatting, creating,

**Practical based on HWN-103**

**Instructions for practical:**

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

**Suggested Resources for Reading:**

3. Craig Zacker., The Complete Reference: PC Hardware, TMH Publication

**References Resources:**

1. Scott Mueller., Upgrading and Repairing PC, Pearson

***************
Objectives: Networking Fundamentals teaches the basic concepts and terminology of networking. The syllabus covers media types and standards. Students are also introduced to the terminology and basic concepts and Open Systems Interconnection (OSI) model.

Instructions for Examiner:
1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising two questions from each unit, including Question No.1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT I

Network concepts: Introduction to Network, characteristics, need, types of networks on the basis of area coverage: LAN, WAN, MAN; Advantages and Disadvantages of networks; Network Topologies: bus topology, ring topology, star topology, tree topology, mesh topology and hybrid topology. Network Models: Peer-to-Peer, protocol, client/server network and hybrid type network. Servers: Different types of servers, Network protocols

UNIT-II


UNIT-III

Networking protocols: DNS, FTP, Telnet, DHCP, HTTP, TFTP, SSH, SFTP, SMTP, POP, IMAP, NTP
UNIT-IV

IP address: Introduction, IP address format, classes of IP Address, subnet address, Configuration of IP Address in PC, Configuration of IP address in Switch, configuration of Wireless Devices, Access Points Network Interface card (NIC): working principle of NIC, MAC Address, User Management: overview of user account, managing user account and password security: adding user, setting and changing password, changing picture of user, deleting the user, setting account restriction for the user, renaming a local account.

Practical based on HWN-104

Instructions for practical:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Suggested Resources for Reading:


References Resources:

2. CCNA Cisco Certified Network Associate Study Guide 3rd Edition, Mcgraw Hill Education
Job Role: Field Technician-Computing and Peripherals

Objectives: The objective of this paper is to provide in-depth knowledge about the concepts of networking. It offers integrated and comprehensive coverage of networking tools and devices.

Instructions for Examiner:
1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 10 marks.
4. Practical file carries 10 marks and 40 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

UNIT-I
Networking Tools: Crimping tool, punching tool: Impact and Punch down Tool, Multi Punch Tool, RJ45 Punch Down Tool, Impact Tool, Computer Punch Tool – deluxe, Cable cutter, I/O device, I/O Face Plate, I/O Box, LAN Cards, Connectors: RJ-11 (Registered Jack), RJ-45 (Registered Jack), F-Type, ST (Straight Tip) and SC (Subscriber Connector or Standard Connector), Fiber LC (Local Connector), MT-RJ (Mechanical Transfer Registered Jack), USB (Universal Serial Bus), LAN Patch Panel, Network Switch Rack

UNIT-II

UNIT-III
Working of cables: Coaxial cable, Unshielded twisted pair (UTP), Types of UTP Cable, Shielded Twisted-Pair Cable, Fiber optics, Patch Cords: UTP Patch cords, Fiber patch cords, Cable Manager, Cable Tag, Cable stripper, Scissors.
UNIT-IV

Working on Hub and Switch: Types of Hub: Active Hub, Passive Hub and Intelligent Hub, Types of switches: Unmanaged Network Switches, Managed Switches, Smart Switches.

Setting up of network: UTP cables, Switch, LAN tester, Switch Rack, Patch Panel, Cable Manager, Cable tagging, I/O box, I/O face plate, patch cords, connectors, terminals.

Suggested Resources for Reading:

1. CCNA Cisco Certified Network Associate Study Guide 3rd Edition, Mcgraw Hill Education
2. Cisco Networking Essentials, Author: mcmillan, troy|author; John Wiley & Sons

References Resources:


********************
Objective: To expose the students to the concept of ‘Human Development’ (Personal and interpersonal) with emphasis on the latent resources that every human being possesses. To fulfil the need and importance of creating an awareness of these resources and to maximize the same to enable the students meet the challenges of the modern world.

Instructions for Examiner:
1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT I

Attitude, Process of attitude formation, How to build a success attitude, Spot analysis, Self management techniques, Self-image and self-esteem, Building self-confidence, Power of irresistible enthusiasm, etiquettes and manners in a group, public speaking, oral and written communication, Body language, Importance of listening and responding, tips for technical writing.

UNIT II

UNIT III

Introduction to Personality-Basic of Personality, Human growth and Behaviour, Theories in Personality, Motivation; Techniques in Personality development – Self-confidence, Mnemonics, Goal setting, Time Management and effective planning, Techniques in Personality Development-Stress Management, Meditation and concentration techniques, Self hypnotism, Self-acceptance and Self-growth.

UNIT IV

Co-ordination while working in a team, Leadership styles, Leader & Team player, Management of conflict, Profiles of great and successful personalities, Role of career planning in personality development, How to face personal interviews and group discussions

Suggested Resources for Reading:

1. ‘Personality Development’ by Rajiv K. Mishra, Rupa& Co
2. ‘An Approach to Communication Skills’ by Indrajit Bhattacharya, Delhi : DhanpatRai
3. ‘Business Communication Skills’ by Varinder Kumar, Bodh Raj, Manocha, Kalyani Publishers, New Delhi

References Resources:

1. ‘Introduction to Psychology’ by Atkinson and Hilgard’s, Edward E. Smith, Susan Nolen-Hoeksema, Barbara Fredrickson, Geoffrey Loftus
2. ‘Communication Today & Tomorrow’ by Ravi Aggarwal, Sublime Publications, Jaipur

*******
Objectives: The objective of this paper is to familiarize the students with the importance of ethics in business and understanding of issues related to corporate social responsibility and corporate governance.

Instructions for Examiner:
1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT 1
Business Ethics: Meaning and Concept, Principles of Business Ethics, Characteristics of Ethical Organisations, Theories of Business Ethics.

UNIT-II
Globalization and Business Ethics, Stakeholder’s Protection, Corporate Governance and Business Ethics. Ethical Issues in Indian Business.

UNIT - III
Professional Values: Objectives, Morals, Values, Ethics, Integrity, Work ethics, Service learning, Virtues, Respect for others, Living peacefully, Caring, Sharing, Honesty, Courage, Valuing time, Cooperation, Commitment, Empathy, Self-confidence, Challenges in the work place, Spirituality.

UNIT - IV
Corporate Social Responsibility: Social Responsibility of business with respect to different stakeholders, Arguments for and against social responsibility of business, Social Audit, Corporate Social Responsibility and Corporate Governance.

Suggested Resources for Reading:
References Resources:

1. O. C. Ferrell, John Fraedrich, Linda Ferrell, Business Ethics: Ethical Decision Making & Cases, Cengage Learning


***********

Paper Title: PERSONAL COMPUTING SOFTWARE        Paper Code: HWN-203   Credits: 6

Job Role: Field Technician-Computing and Peripherals

Objectives: The objective of this course is to familiarize students with Fundamentals of Information Technology and its applications. It enables the student to get practical exposure towards MS-Office tools

Instructions for Examiner:

1. The syllabus of this paper has been divided into FOUR units.

2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.

3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.

4. All questions carry equal marks.

UNIT- I

DOS: Versions of DOS: Booting sequence; Warm and Cold reboot; Concept of File and directory, Redirecting command input and output pipes, Wildcard characters, Types of DOS commands: Internal and External; Internal Commands: DIR, MD, CD, CLS, COPY, DATE, DEL, PATH, PROMPT, REN,
RD, TIME, TYPE, VER, VOL; External Commands: XCOPY, ATTRIB, BACKUP, RESTORE, FIND, SYS, FORMAT, CHKDSK, DISKCOPY, LABEL, MOVE, TREE, DELTREE, DEFRAG, SCANNDISK, UNDELETE. Batch Files: Introduction to simple batch files; Introduction to CONFIG.SYS and AUTOEXEC.BAT files. Graphical User Interface: Fundamentals of windows, types of windows, anatomy of windows, Icons, Recycle bin Operations on window: Opening a Window, Minimizing and Maximizing a window, Moving window, Resizing Window, Closing the window windows explorer Folders: Creating and deleting folders, copying, renaming folders, folder properties. Control panel.

UNIT- II

Word Processing Package: Basics of Word Processing; Opening and Closing of documents; Text creation and Manipulation; Finding and replacing text, Printing of document, Formatting of text; Margin setting, Adding Borders and shading, Adding Headers and Footers, Setting up Multiple columns, Working with tables, Spell check, Grammar facility, Auto text, language setting and thesaurus; Mail merging. Installation of Word Processing Software.

UNIT- III


UNIT- IV

Presentation Packages: Basics, General Features, Creating a presentation, formatting and enhancing text, Incorporation of Animation, adding charts, multimedia, page setup and printing slides. Installation of Presentation software. Internet and WWW: Evolution of Internet, services provided on Internet, Access Methods, application of Internet.
Practical based on HWN-203

Instructions for practical:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three questions.
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Suggested Resources for Reading:


References Resources:


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Job Role: Field Technician-Computing and Peripherals

Objectives: This paper enables the students to identify the hardware in-depth and helps them to learn about hardware technologies, their implementation/installation, uses, troubleshooting and maintenance.

Instructions for Examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT- I

Trouble Shooting Basics: Basic Trouble shooting, the need for trouble shooting plan, elements of trouble shooting, general trouble shooting process. Diagnostic, Trouble Shooting and Repair Tools: Diagnostic software, Diagnostic hardware, the PC toolkit. Keyboard: Types of keyboard, correcting problems, vacuum cleaners and keyboards, keyboard maintenance, Mouse: Mouse basics, working with a mouse, performing mouse actions, inside the mouse, adjusting mouse properties, mouse keys, mouse maintenance, Optical mouse, breakdown and break through.

UNIT- II

Monitors: basic, VGA, DVI, viewable area, maximum resolution and dot pitch, power consumption, flat panel, monitor resolution, colour depth, degaussing, power option for monitor, display option for monitor, monitor maintenance. Hard Disk Drives: History, construction and operations of hard disk, read/write heads, File allocation table (FAT, FAT12, FAT16), Virtual FAT (VFAT), 32-Bit FAT (FAT32), New Technology File System (NTFS), High Performance File System (HPFS), Hard Disk tools: clean-up, error checking, disk fragmentation, change drive name and letters, virus scan, formatting a hard disk from windows, formatting a hard disk from DOS windows, installing master slave drives, CMOS identification of master slave disk, breakdown and break through.
UNIT- III


UNIT- IV

Mother board: Introduction, types, processor sockets and slots, memory sockets, cache and/or cache sockets, I/O bus slots, power connector, voltage regulator, capacitors, keyboard and mouse connectors, chipset chips, keyboard controller, real-time clock, super I/O controller, BIOS chips, battery, jumpers, ports and headers, pin connectors, upgrading motherboards, installing RAM and new processor. Power and SMPS: Power supply, AC-DC voltage conversion, parts of power supply, trouble shooting.

Practical based on HWN-204

Instructions for practical:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Suggested Resources for Reading:

3. Craig Zacker., The Complete Reference: PC Hardware, TMH Publication

References Resources:

1. Scott Mueller., Upgrading and Repairing PC, Pearson

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Paper Title: Practical on Networking–II  

Paper Code: HWN-205  
Credits: 6

Job Role: Field Technician-Computing and Peripherals

Objectives: The objective of this paper is to provide in-depth knowledge about the concepts of networking. It offers integrated and comprehensive coverage of networking tools and devices.

Instructions for Examiner:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 10 marks.
4. Practical file carries 10 marks and 40 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

UNIT- I

Patching of LAN Cable: Strip cable end, Untwist wire ends, Arrange wires, Trim wires to size, Attach connector, Check, Crimp, and Test. Setting up of LAN: UTP cables, Switch, LAN tester, Switch Rack, Patch Panel, Cable Manager, Cable tagging, I/O box, I/O face plate, patch cords, connectors, terminals.

UNIT- II

Internet connectivity: Different types of internet connection: Wireless, mobile, Hotspot, Dial-up, Broadband, DSL, Cable, Satellite, ISDN, Internet Service Provider (ISP), bandwidth or speed tester, Internet connectivity switch and PC, configuration of switch, managing of switching, troubleshooting of switching, testing application for switch.

UNIT- III

Wi-fi Connectivity: Basic Configuration of Wi-Fi device or access point, IP address configuration, DNS Address, DHCP mode, Security and Password, Admin login and password, MAC Filtering, Monitoring, Backup and restore, etc.
UNIT- IV

Switch connectivity: Managed and unmanaged switch, Basic configuration of switch, mac filtering, IP address configuration, DNS address, DHCP Mode, Admin login and Password, VLAN, backup file and restore settings.

Suggested Resources for Reading:

1. CCNA Cisco Certified Network Associate Study Guide 3rd Edition, Mcgraw Hill Education

References Resources:


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B.Voc. (HARDWARE AND NETWORKING)  Semester :III

Paper Title: VALUE EDUCATION AND HUMAN RIGHTS  Paper Code: *GEN 301  Credits: 6

Job Role: Network Support Engineer

Objective: The objective of this paper is to impart basic human values to students through formal education and contribute to making the student a true human being, who is able to face life and make it meaningful.

Instructions for Examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT -I

Value Education: Its purpose and significance in the present world; Value system – The role of culture and civilization; Holistic living – Balancing the outer and inner –Body, Mind and Intellectual level-Duties and responsibilities.

UNIT- II

Salient values for life- Truth, commitment, honesty and integrity, forgiveness and love, empathy and ability to sacrifice, care, unity , and inclusiveness, Self-esteem and self-confidence, punctuality – Time, task and resource management – Problem solving and decision making skills- Interpersonal and Intra personal relationship – Team work – Positive and creative thinking

UNIT- III

UNIT- IV

Social Evils – Corruption, Cybercrime, Terrorism – Alcoholism, Drug addiction – Dowry – Domestic violence – untouchability – female infanticide – atrocities against women- How to tackle them

Suggested Resources for Reading:

2. ‘Ethics, Education, Indian Unity and Culture’ by Satchidananda, M.K., Ajantha Publications, Delhi, 1991

References Resources:

1. ‘Education and Human Values’ by M.G. Chitakra, A.P.H. Publishing Corporation, New Delhi, 2003
3. ‘Human Values and education’ by Ruhela, S.P., Sterling Publications, New Delhi, 1986
5. ‘Education in Values’, NCERT, New Delhi, 1992

**********
Objective: The objective of this paper is to provide fundamental knowledge to the students about E-Commerce so that they can better perform in any area of operation and can excel in the field of commerce with IT specialization.

Instructions for Examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT I


UNIT II


UNIT-III

UNIT-IV


Suggested Resources for Reading:

2. ‘Frontiers of Eletronic Commerce’ by Ravi Kalakota, and Andrew B.Shinston, Addision Wesley.

References Resources:

1. ‘Electronic Commerce’ by GrayP.Schneider, Course Technology, Delhi.
3. ‘Understanding E-Commerce’ by David Kosiur, Microsoft Press. 1997

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Objective: This course enables students to understand the concepts of Operating System. After the completion of this paper, student will be able to manage various processes, files and folders on the disk and desktop with effective outcome.

Instructions for Examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT- I


UNIT- II

Folder and file management: Working with files, Naming files, Navigate to Folders with Windows Explorer, Copying and moving files, Deleting files, Managing folders, Creating, Viewing, Expanding and collapsing, Backing up and restoring files. Components of Windows: format of a window, moving windows, resizing windows, minimizing and maximizing windows.

UNIT- III

Control panel: Customizing screens, Screen colours, Patterns, Spacing icons, selecting time/date, setting the Sound, Concept of menu Using Help, Creating Short cuts, Basics of Window Setup, Notepad, Window Accessories, System restore. Customizing printing, changing the print queue, configuring the
printer, Adding printers. Working with fonts: changing, removing, adding, customizing mouse and keyboard use.

UNIT- IV

System properties and the device manager Management tools, DOS sessions, Explorer, Memory configuration, Safe mode Install and uninstall applications, Setup/troubleshooting issues. Maintaining and optimizing disks: Disk Cleanup, Disk defragmenter, Compressing and uncompressing folders and files. Encrypting and decrypting folders and files.

Practical based on HWN-303

Instructions for practical:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Suggested Resources for Reading:


References Resources:


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Job Role: Network Support Engineer

Objective: This course provides an integrated and comprehensive coverage of networking topics from fundamentals to advanced application and services, it enable the students to enhance career development skill in the field of networking.

Instructions for Examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I

Router: Introduction, components of routers, Types of Routers: Broadband Routers, Wireless Routers, Edge Router, Subscriber Edge Router, Inter-provider Border Router, Core Router, Wired and Wireless Routers. Functions of routers, router modes, Configuration of Router: names, passwords, password encryption, interfaces name, creating a login banner, saving configuration and erasing configuration.

UNIT-II


UNIT-III

UNIT- IV

Switching: Introduction, Switching Services, Bridging vs LAN Switching, Switch Functions at Layer 2, Definition of Spanning Tree Protocol (STP), Operations of STP, STP Port States, Definition of VLAN, Typing of VLAN: Static and Dynamic, VLAN Identification Methods, VLAN Trunking Protocol (VTP), VTP Modes of Operation, Routing between VLANs, Configuring Inter-VLAN Routing.

Practical based on HWN-304

Instructions for practical:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Suggested Resources for Reading:

2. Todd Lammleccna, Routing and Switching Study Guide, Wiley India Pvt Ltd
3. CCNA Cisco Certified Network Associate Study Guide 3rd Edition, Mcgraw Hill Education
4. Mcmillan,Cisco Networking Essentials, Author: John Wiley & Sons

References Resources:


**********
Objective: Routing technology provides an integrated and comprehensive coverage of networking topics from fundamentals to advanced application and services, while providing opportunities for hands on practical experiences and career skill development.

Instructions for Examiner:
1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three questions.
3. Each question carries 10 marks.
4. Practical file carries 10 marks and 40 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

UNIT-I
Functionality of Router and Switch: Describe basic routing concepts: packet forwarding, router lookup process, Process Switching/Fast Switching/CEF, Configure and verify utilizing the CLI to set basic Router configuration: hostname, local user and password, enable secret password, console and VTY logins, exec-timeout, service password encryption, Interface IP Address, loopback, banner, motd, copy run start.

UNIT-II
Configure and verify operation status of a device interface: Serial, Ethernet, Verify router configuration and network connectivity using, ping, extended, traceroute, telnet, SSH, show neighbors. Describe the boot process of Cisco IOS routers, Configure and verify utilizing the CLI to set basic Router configuration, Configure and verify operation status of a device interface, both serial and Ethernet, Verify router configuration and network connectivity. IP Routing Technologies: Configure and verify routing configuration for a static or default route given specific routing requirements.

UNIT-III
Differentiate methods of routing and routing protocols, Static versus Dynamic, 4.6.b Link state versus Distance Vector, next hop, ip routing table, Passive Interfaces (how they work), Admin Distance, and split horizon, metric. Configure and Verify OSPF: Benefit of single area, Configure OSPv2, Configure OSPv3, Router ID, Passive Interface, Discuss multi-area OSPF, Understand LSA types and purpose.
UNIT-IV
Configure and verify inter VLAN routing (Router on a stick), sub interfaces, upstream routing, encapsulation, Configure SVI interfaces, Manage Cisco IOS Files, Boot Preferences, Cisco IOS Images (15), Licensing, Show license, Change license, Configure and verify EIGRP (single AS), Feasible Distance/Feasible Successors/Administrative distance, Feasibility condition, Metric composition, Router ID, auto summary, Path Selection, Load Balancing, Unequal, Equal.

Suggested Resources for Reading:
2. Todd Lammleccna, Routing and Switching Study Guide, Wiley India Pvt Ltd
3. CCNA Cisco Certified Network Associate Study Guide 3rd Edition, Mcgraw Hill Education

References Resources:
1. Mcmillan,Cisco Networking Essentials, Author: John Wiley & Sons

*******************************************************************************
Job Role: Network Support Engineer

Objective: The objective of the paper is to understand the basic concepts of the natural environment, to identify the different sources of pollution and their related effects, and to have awareness about the conservation strategies and laws followed in India.

Instructions for Examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I


UNIT-II

Renewable and non-renewable resources. Concept of sustainable development. Biodiversity: Definition, hotspots, national parks, biosphere reserves, wildlife sanctuaries.

UNIT-III

Pollution: Air, water, soil, noise and marine, Natural and anthropogenic sources of pollution. Effects of different types of pollutions Primary and secondary pollutants. Radioactive and thermal pollution. Acid rain
UNIT-IV

**Global environment issues:** Ozone depletion, global warming and climatic change. Environmental conservation strategies and projects in India, Ganga action plan, Yamuna action plan, Project tiger etc. Environmental laws in India.

**Suggested Resources for Reading:**


**References Resources:**


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Objecitves: The objective of this paper is to provide knowledge to students about the essentials of undertaking projects in an organizational environment.

Instructions for Examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I

Project Manager: Roles and Responsibilities, Project Management as a Profession.

UNIT-II


UNIT-III


UNIT-IV

Suggested Resources for Reading:

2. Project Management: The Managerial Process (Special Indian Edit.) - Clifford F Gray, Oregon State University.

References Resources:


**********
Objective: The objective of this paper is to provide practical knowledge to the students about the Network Server. This course is meant to examine Windows Server while giving maximum learning potential to new Windows Administrators and Windows Developers.

Instructions for Examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I


UNIT-II

UNIT-III


UNIT-IV


Practical based on HWN-403

**Instructions for practical:**

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

**Suggested Resources for Reading:**

1. Windows Server Administration Fundamentals by Microsoft Official Academic Course
3. Tom Carpenter, Microsoft Windows Server Administration Essentials

**References Resources:**


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Paper Title: NETWORK ADMINISTRATION & TROUBLESHOOTING

Paper Code: HWN-404  Credits: 6

Job Role: Network Support Engineer

Objective: The goal of this course is to train students to an exceptionally high standards in network planning, implementation, administration and support.

Instructions for examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I

Backing UP and Restoring IOS Software and Configuration: Boot system commands, IOS file system, backing up configuration to a TFTP server, restoring configuration to a TFTP server, backing up the IOS software to a TFTP server, restoring/upgrading the IOS software from a TFTP server, restoring IOS software from ROM Monitor mode using Xmodem.

UNIT-II

Password-Recovery Procedures and configuration Register:The configuration register: A visual representation, bit means, the boot field, console terminal baud rate setting, console line speed: CLI & ROM Monitor mode, password recovery procedures for router, password recovery procedures for switches.

UNIT-III

Basic troubleshooting: viewing routing table, determining the gateway of last resort, last routing update, OSI layer 3 testing, OSI layer 7 testing, interpreting the show interface command, using CDP to troubleshooting, show controllers command debug commands, time stamps, Operating system IP verification commands, the ip http server command, netstat command.
UNIT-IV

Security Device Manager: SDM connecting with CLI and GUI, SDM Express Wizard with no CLI pre-configuration, resetting the router to factory defaults, SDM user interfaces, configuration routing using SDM, SDM monitor mode, SDM to configuration a router as a DHCP server & client, SDM configuration NAT/PAT.

Practical based on HWN-404

Instructions for practical:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Suggested Resources for Reading:

1. CCNA Cisco Certified Network Associate Study Guide 3rd Edition, Mcgraw Hill Education
2. Cisco Networking Essentials, Author: mcmillan, troylauthor; John Wiley & Sons

References Resources:


************
Job Role: Network Support Engineer

Objective: Switching technology provides an integrated and comprehensive coverage of networking topics from fundamentals to advanced application and services, while providing opportunities for hands on practical experiences and career skill development.

Instructions for examiner:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 10 marks.
4. Practical file carries 10 marks and 40 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

UNIT-I

IP Services: Configure and verify DHCP (IOS Router), Configuring router interfaces to use DHCP, DHCP options (basic overview and functionality), Excluded addresses, Lease time, Describe the types, features, and applications of ACLs, standard (editing and sequence numbers) extended, named, numbered, Log option. Configure and verify ACLs in a network environment, named, numbered, Log option, Identify the basic operation of NAT, purpose, pool, static, 1 to 1, overloading, source addressing, one way NAT, Configure and verify NAT for given network requirements.

UNIT-II

Configure and verify NTP as a client. Recognize High availability (FHRP), VRRP, HSRP, GLBP, and Configure and verify syslog, Utilize Syslog Output, Describe SNMP v2 and v3. LAN Switching Technologies: Determine the technology and media access control method for Ethernet networks, Identify basic switching concepts and the operation of Cisco switches: Collision Domains, Broadcast Domains, Ways to switch, Store, Forward, Cut through, CAM Table.
UNIT-III

Configure and verify initial switch configuration including remote access management: Hostname, management IP address, IP default-gateway, local user and password, enable secret password Console and VTY logins, exec-timeout service password encryption, copy run start, Verify network status and switch operation using basic utilities such as: ping, telnet, SSH. Describe how VLANs create logically separate networks and the need for routing between them, Explain network segmentation and basic traffic management concepts, Configure and verify VLANs.

UNIT-IV

Configure and verify trunking on Cisco switches: dtp (topic), auto-negotiation, Identify enhanced switching technologies: RSTP, PVSTP, Ether channels, Configure and verify PVSTP operation: Describe root bridge election, Spanning tree mode. Configure and verify Switch Port Security: Sticky mac, MAC address limitation, static/dynamic, violation modes, err disable, shutdown, protect restrict, shutdown unused ports, err disable recovery, assign unused ports in unused VLANs, putting Native VLAN to other than VLAN 1.

Suggested Resources for Reading:

2. Todd Lammleccna, Routing and Switching Study Guide, Wiley India Pvt Ltd
3. CCNA Cisco Certified Network Associate Study Guide 3rd Edition, Mcgraw Hill Education
4. Mcmillan,Cisco Networking Essentials, Author: John Wiley & Sons

References Resources:

Paper Title: - Critical Thinking and Elementary Statistics  

Job Role: Network Administrator

Objective: The objective of the paper is to provide knowledge to student about basics of statistics and to inculcate the habit of critical thinking.

Instructions for examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I

Introduction: Statistics as a Subject ; Statistical Data: Meaning and Types , Collection and Rounding of Data, Classification and Presentation of Data.

UNIT-II

Analysis of Univariate Data: Construction of a Frequency Distribution; Concept of Central Tendency, mean, median and mode.

UNIT-III

Dispersion and Their Measures; Time Series: Meaning, Components, Models, Fitting Linear and Quadratic Trend

UNIT-IV

Index Number: Meaning, Types, and Uses: Methods of Constructing Price and Quantity Indices (Simple and Aggregate).
Suggested Resources for Reading:


References Resources:


**********
Objective: The objective of the module is to familiarize the students with basics of research methodology like types of research, data collection, sampling techniques and report writing.

Instructions for examiner:
1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT I
Research - Meaning, Characteristics, Types, Process and Utility,. Research Design - Meaning, Types and Features of good research design. Qualitative and Quantitative research. Importance of review of literature. The research proposal.

UNIT II
Primary and Secondary data. Methods of data collection. Measurement and scaling, Designing of Questionnaire and schedule.

UNIT III
Sampling Design and Sampling procedure. Sampling and non-sampling errors. Data analysis and interpretation. Role of computers in research.

UNIT IV
Suggested Resources for Reading:


References Resources:

1. ‘Research Methodology A Step by Step Guide for Beginners’ by R. Kumar, Pearson Education.

*************
Objectives: This course enables students to get familiar with Linux system, its commands, files & directories, shell programming, and system administration. Student will learn to Work in the Linux environment and administrate the Linux machine.

Instructions for examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT – I


UNIT –II

Filters and pipes: head, tail, wc, pr, cut, paste, sort, unique, grep, egrep, fgrep, tee. The process : shell process, parent and children ,process status, system process, multiple jobs in background and foreground, changing process priority with nice, premature termination of process, Mathematical commands- bc, expr, factor, units

UNIT –III

Creating and editing files with VI editor with their command options, Operators, text deletion, text movement, changing text, yanking text, filtering text, the ex-mode, moving text from one file to another.
Communication: The bulletin board – news, write, msg, talk, mail, elm, pine, finger, vacation and connecting to remote machine.

UNIT -IV

System administration Common administrative tasks, identifying administrative files – configuration and log files, Role of system administrator, Managing user accounts–adding & deleting users, changing permissions and ownerships, Installation of Linux system– Linux Installation requirement, complete Procedure steps, Partitioning the Hard drive, System startup and shut-down process, init and run levels. File system mounting, lpstat, backup strategy, installing software on Linux.

Practical based on HWN-503

Instructions for practical:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Suggested Resources for Reading:


References Resources:

Objective: The objective of the paper is to provide students with the knowledge of virtual machines and how to create the virtual machine the concepts to manage them.

Instructions for examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I

Installing Workstation: Installing Workstation Basics, Installing Debuggers, Upgrading Workstation, Workstation Window Tour, Setting Workstation Preferences, Getting Help, Finding Your License Key, Creating Virtual Machines, Preparing to Create a VM, Understanding Memory Options, Understanding Page Faults, Understanding Virtual Disk, Understanding Virtual Disk Options, Creating a VM, Working with Easy Install, Installing a Guest OS, Installing a Guest OS, Virtualizing a Physical Machine, Importing Virtual Machines, Importing Virtual Box VMs, Installing VMware Tools, VM Files, VMDK File Names

UNIT-II

UNIT-III

Manage and Configure VMs: Workstation Display Preferences, Unity Mode, Encrypting VMs, Moving VMs, Understanding the UUID, Understanding Cloning, Cloning VMs, Changing Hardware Compatibility, Exporting VMs. Configuring Devices: Configuring DVDs, Configuring USB Controllers, Managing the VHD, Compacting the VHD, Expanding the VHD, Defragmenting the VHD, The Virtual Disk Manager, Configuring Keyboard Features

UNIT-IV


Practical based on HWN-504

Instructions for practical:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University

Suggested Resources for Reading:


**********
Paper Title: ADVANCED ROUTING AND SWITCHING

Job Role: Network Administrator

Objective: Routing and Switching technology provides an integrated and comprehensive coverage of networking topics from fundamentals to advanced application and services, while providing opportunities for hands on practical experiences and career skill development.

Instruction for examiner:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 10 marks.
4. Practical file carries 10 marks and 40 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

UNIT- I

IP Addressing (IPv4/IPv6): Describe the operation and necessity of using private and public IP addresses for IPv4 addressing, Identify the appropriate IPv6 addressing scheme to satisfy addressing requirements in a LAN/WAN environment.

UNIT- II

Identify the appropriate IPv4 addressing scheme using VLSM and summarization to satisfy addressing requirements in a LAN/WAN environment. Describe the technological requirements for running IPv6 in conjunction with IPv4, dual stack, Describe IPv6 addresses, global unicast, Multicast, link local, unique local, eui 64, auto-configuration.

UNIT- III

Network Device Security: Configure and verify network device security features: Device password security, enable secret versus enable, Transport, disable telnet, SSH, VTYs, physical security, service password.

UNIT- IV

Describe external authentication methods. Configure and verify a basic WAN serial connection, Configure and verify a PPP connection between Cisco routers, Configure and verify Frame Relay on Cisco routers, Implement and troubleshoot PPPoE.
Suggested Resources for Reading:

2. Todd Lammleccna, Routing and Switching Study Guide, Wiley India Pvt Ltd
3. CCNA Cisco Certified Network Associate Study Guide 3rd Edition, Mcgraw Hill Education

References Resources:

1. Mcmillan,Cisco Networking Essentials, Author: John Wiley & Sons
Objective: EDPs aim at training various target groups in entrepreneurial traits so that they obtain adequate information, motivation and guidance in setting up their own enterprises.

Instructions for examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT-I


UNIT-II


UNIT-III

UNIT-IV

Rules & Regulations: Governmental Policies and formalities in setting up a unit. Basic requirements regarding registration, Excise, Sales Tax, Factory Act, SSI exemptions: Licensing and Registration procedure; Appreciation of important provisions of Factory Act,


Suggested Resources for Reading:


References Resources:

5. ‘Industrial Relations’ by B.P. Gupta, PHD Chamber of Commerce & Inds, 1986

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Objective: The objective of the paper is to provide knowledge to students of the concepts of total quality management and to inculcate among them a concern for quality and customer satisfaction.

Instructions for examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT I

Introduction: Definition of Quality, Dimensions of Quality, Quality Planning, Quality costs and its Analysis, Basic concepts of Total Quality Management, Principles of TQM.

UNIT II


UNIT III


UNIT IV

Suggested Resources for Reading:


References Resources:

2. ‘Total Quality Management’ by James R. Evans, Cengage Learning

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Job Role: Network Administrator

Objective: This course will enable the student to study about wireless networking and communication along with different technologies.

Instructions for examiner:

1. The syllabus of this paper has been divided into FOUR units.
2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.
3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.
4. All questions carry equal marks.

UNIT I


UNIT II

Cellular system design fundamentals: Allocation of spectrum, basic cellular system, frequency reuse, channel assignment strategies, handoff strategies, interference and system capacity, trucking and grade off service, improving coverage and capacity, cell splitting. Multiple access technique for wireless communications: introduction to multiple accesses, FDMA, TDMA, spread spectrum multiple access, SDMA, packet radio, capacity of cellular systems.

UNIT III

Wireless Networking: Difference between wireless and fixed telephone networks, development of wireless networks, fixed network transmission hierarchy, traffic routing in wireless networks, wireless data services, common channel signalling. Wireless WAN: mechanism to support at mobile environment, communication in the infrastructure, IS-95 CDMA forward channel, IS-95 CDMA risers channel, packet and frame formats in IS-95,IMT -20000, forward channel in W-CDMA and CDMA 2000, reverse
channels in W-CDMA and CDMA -2000 GPRS and higher data rates, short messaging service in GPRS mobile application protocols.

UNIT IV

Wireless land: Historical overviews of the land industry, evolution of the wan industry, wireless home networking IEEE 802.11 the PHY layer, Mac layer wireless ATM, Hyperlink, Hyper Lan-2

Orthogonal frequency division multiplexing: basic principles of orthogonality single versus multi channel systems, OFDM block diagramOFDM signal mathematical representation.

Practical based on HWN-603

Instructions for practical:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and marks will be submitted to Panjab University.

Suggested Resources for Reading:


References Resources:


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Job Role: Network Administrator

Objectives: This paper enables the students to learn to configure, install, and administrate a firewall and handle its functionality.

Instructions for examiner:

1. The syllabus of this paper has been divided into FOUR units.

2. Examiner will set a total of NINE questions comprising Two questions from each unit, including Question No. 1 (compulsory) of short answer type covering the whole syllabus.

3. The students are required to attempt one question from each unit and the entire Compulsory Question No. 1.

4. All questions carry equal marks.

UNIT-I


UNIT-II

Web Admin: Web Admin Menu Button bar, lists searching in lists, dialog boxes, buttons and icons, object lists. Dashboard: dashboard settings, flow monitor, Management: System settings, organizational, hostname, time and date, scan settings, reset configuration or passwords. Web admin settings: general, access control, user rights HTTPs certificate, user preferences, Licensing, up2date, backup/restore, user portal, notifications, hardware and software requirements, status system status configuration, shutdown and restart.

UNIT-III

Prevention: Global attack patterns, Anti-Dos/Flooding, Anti-Portscan, Exceptions, Advanced, Server
Load Balancing: Balancing Rules

UNIT-IV

Web Protection: Web filtering: some key differences, common tasks, migration, Global, Https, Policies:
Filter action wizard, categories, websites, downloads, antivirus, Web filter Profile: Filter profiles, filter
actions, parent proxies, Filtering options: exceptions, websites, bypass users, potentially unwanted
applications categories, Logging & Reporting : View Log Files, Today's Log Files, Archived Log Files,
Search Log Files, Hardware Daily, Weekly, Monthly, Yearly.

Practical based on HWN-604

Instructions for practical:

1. Examiner will set total of four questions covering the whole syllabus.
2. Student will attempt any three question
3. Each question carries 5 marks.
4. Practical file carries 5 marks and 20 marks for practical work and viva-voce.
5. Practical paper will be conducted by the college in collaboration with the respective experts and
   marks will be submitted to Panjab University.

Suggested Resources for Reading:


References Resources:

1. Dameon D Welch-Abernathy, “Essential Check Point Firewall-1 NG: An Installation,
   Configuration, and Troubleshooting Guide”, Pearson Education
2. “Key Features of Framework for Monitoring Hardware Firewall Functionality Using
   Nids”, LAP Lambert Academic Publishing.

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Objective: IP ROUTING technology provides an integrated and comprehensive coverage of networking topics from fundamentals to advanced application and services, while providing opportunities for hands-on practical experiences and career skill development.

UNIT-I
Implement an EIGRP based solution, given a network design and a set of requirements: Determine network resources needed for implementing EIGRP on a network, Create an EIGRP implementation plan, Create an EIGRP verification plan, Configure EIGRP routing, Verify EIGRP solution was implemented properly using show and debug commands, Document results of EIGRP implementation and verification plan.

Implement a multi-area OSPF Network, given a network design and a set of requirements: Determine network resources needed for implementing OSPF on a network, Create an OSPF implementation plan, Create an OSPF verification plan, Configure OSPF routing, Verify OSPF solution was implemented properly using show and debug commands, Document results of OSPF implementation and verification plan.

UNIT-II
Implement an eBGP based solution, given a network design and a set of requirements: Determine network resources needed for implementing eBGP on a network, Create an eBGP implementation plan, Create an eBGP verification plan, Configure eBGP routing, Verify eBGP solution was implemented properly using show and debug commands, Document results of eBGP implementation and verification plan.

Implement an IPv6 based solution, given a network design and a set of requirements: Determine network resources needed for implementing IPv6 on a network, Create an IPv6 implementation plan, Create an
IPv6 verification plan, Configure IPv6 routing, Configure IPv6 interoperation with IPv4, Verify IPv6 solution was implemented properly using show and debug commands, Document results of IPv6 implementation and verification plan

UNIT-III

Implement an IPv4 or IPv6 based redistribution solution, given a network design and a set of requirements: Create a redistribution implementation plan based upon the results of the redistribution analysis, Create a redistribution verification plan, Configure a redistribution solution, Verify that a redistribution was implemented, Document results of a redistribution implementation and verification plan, Identify the differences between implementing an IPv4 and IPv6 redistribution solution

UNIT-IV

Implement Layer 3 Path Control Solution: Create a Layer 3 path control implementation plan based upon the results of the redistribution analysis, Create a Layer 3 path control verification plan, Configure Layer 3 path control, Verify that a Layer 3 path control was implemented, Document results of a Layer 3 path control implementation and verification plan, Implement basic teleworker and branch services, Describe broadband technologies, Configure basic broadband connections, Describe basic VPN technologies, Configure GRE, Describe branch access technologies

Suggested Resources for Reading:

1. CCNP: Routing, CCIE No Kevin Wallace, Sean Odom, Todd Lammle
2. CCNP Routing and Switching V2.0 Official Cert Guide Library, Author Kevin Wallace, David Hucaby, Raymond Lacoste, Wendell Odom, Publisher CISCO System, 2014
3. CCNP: ROUTING and SWITCHING QUICK Reference, Author: Denise Donohue, Brent Stewart, Publisher Cisco press
4. CCNP: ROUTE 642-902, Author: Wendell Odom, Publisher: Cisco press

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